**IN THE CLAIMS:**

Claims 1 - 144. (Canceled)

145. (Previously presented) A method of determining an optimal location for implanting a pacemaker electrode comprising:

pacing a heart from a first location;

generating a first map of the heart associated with pacing at the first location;

pacing the heart from a second location;

generating a second map of the heart associated with pacing at the second location;

comparing the first and second maps to diagnose the effect of the pacing; and

selecting an optimal location for implanting the pacemaker electrode based on comparing the maps.

146. (Previously presented) A method according to claim 145, wherein generating the first map comprises:

(a) bringing an invasive probe into contact with a site on the wall of the heart;

(b) determining a position of the invasive probe;

(c) determining a cardiac characteristic at the site;

(d) repeating (a)-(c) for a plurality of sites of the heart; and

(e) combining the positions to form a time-dependent map of at least a portion of the heart.

147. (Previously presented) A method according to claim 146, wherein determining the position comprises determining the position at least two different phases of a heart cycle of the heart.

148. (Previously presented) A method according to claim 146, wherein determining the cardiac characteristic at the site comprises determining an electrical value at the site.

149. (Previously presented) A method according to claim 146, wherein determining the cardiac characteristic at the site comprises determining a non-electrical physiological value at the site.

150. (Previously presented) A method according to claim 145, wherein generating the first map comprises:

(a) bringing an invasive probe into contact with a site on the wall of the heart;

(b) determining a position ~~on~~ of the invasive probe;

(c) determining a cardiac characteristic at the site;

(d) repeating (a)-(c) for a plurality of sites of the heart; and

(e) combining the positions to form a map of at least a portion of the heart.

151. (Previously presented) A method according to claim 150, wherein determining the cardiac characteristic comprises determining the cardiac characteristic at the site at a plurality of different phases of the heart cycle.

152. (Previously presented) A method according to claim 150, wherein determining the cardiac characteristic at the site comprises determining a non-electrical physiological value at the site.

153. (Previously presented) A method according to claim 150, wherein determining the cardiac characteristic at the site comprises determining an electrical value at the site.

154. (Previously presented) A method according to claim 150, comprising determining at least a second position of the invasive probe, which position is different from the position determined in (b).

155. (Previously presented) A method according to claim 154, comprising determining at least one local relationship between changes in positions of the invasive probe and a determined local cardiac characteristic.

156. (Previously presented) A method according to claim 150, wherein the cardiac characteristic is determined using a sensor external to the probe.

157. (Previously presented) A method according to claim 156, wherein the sensor is external to a body which comprises the heart.

158. (Previously presented) A method according to claim 150, wherein the cardiac characteristic is determined using a sensor in the invasive probe.

159. (Previously presented) A method according to claim 150, wherein the cardiac characteristic is determined at substantially the same time as the position of the invasive probe.

160. (Previously presented) A method according to claim 150, wherein the cardiac characteristic comprises a thickness of the heart at the site.

161. (Previously presented) A method according to claim 160, wherein the thickness of the heart is determined using an ultrasonic transducer mounted on the invasive probe.

162. (Previously presented) A method according to claim 160, comprising determining a reaction of the heart to an activation signal by analyzing changes in the thickness of the heart.

163. (Previously presented) A method according to claim 150, wherein the cardiac characteristic comprises a measure of a perfusion at the site.

164. (Previously presented) A method according to any claim 150, wherein the cardiac characteristic comprises a measure of work performed at the site.

165. (Previously presented) A method according to claim 150, comprising determining a local electrical activity at each of the plurality of sites of the heart.

166. (Previously presented) A method according to claim 165, wherein the electrical activity comprises a local electrogram.

167. (Previously presented) A method according to claim 165, wherein the electrical activity comprises a local activation time.

168. (Currently amended) A method according to claim 165, wherein the electrical activity ~~comprises~~ is determined as a local plateau duration ~~of heart tissue at location~~ at each

of the plurality of sites of the heart.

169. (Previously presented) A method according to claim 165, wherein the electrical activity comprises a peak-to-peak value of a local electrogram.

170. (Previously presented) A method according to claim 145, wherein comparing the maps comprises analyzing the maps to determine underutilized portions of the heart.

171. (Previously presented) A method according to claim 145, wherein comparing the maps comprises analyzing the maps to determine over-stressed portions of the heart.

172. (Previously presented) A method according to claim 145, wherein selecting the optimal location comprises:

choosing a portion of the heart having a certain amount of muscle tissue thereat; and

determining a pacing regime for changing the workload of the portion.

173. (Previously presented) A method according to claim 172, comprising pacing the heart using the determined pacing regime.

174. (Previously presented) A method according to claim 173, comprising:

waiting a period of time;

then determining the effect of the pacing regime; and

repeating choosing, determining and pacing the heart using the determined pacing regime if a desired effect is not reached.

175. (Previously presented) A method according to claim 174, wherein waiting the period of time comprises waiting at least one week.

176. (Previously presented) A method according to claim 172, wherein the workload of the portion is increased in order to increase the amount of muscle tissue therein.

177. (Previously presented) A method according to claims 172, wherein the workload of the portion is decreased in order to decrease the amount of muscle tissue thereat.

178. (Previously presented) A method according to claim 172, wherein the workload is changed by changing an activation time of the portion.

179. (Previously presented) A method according to claim 172, wherein the map includes electrical activation information.

180. (Previously presented) A method according to claim 172, wherein the map includes mechanical activation information.

181. (Previously presented) A method according to claim 145, comprising determining a cardiac parameter associated with pacing at the first and second locations, and implanting the electrode at the location for which the cardiac parameter is optimal.

182. (Previously presented) A method according to claim 145, wherein pacing the heart from the first location comprises bringing an invasive probe having an electrode to the first location and electrifying the electrode with a pacing current.

183. (Previously presented) A method according to claim 181, wherein determining the cardiac parameter comprises determining stroke volume.

184. (Previously presented) A method according to claim 181, wherein determining the cardiac parameter comprises determining intra-cardiac pressure.

185. (Previously presented) A method according to claim 181, wherein determining the cardiac parameter comprises measuring the cardiac parameter using an invasive probe.

186. (Previously presented) A method according to claim 145, wherein generating the first map comprises determining a local physiological value at a plurality of sites in the heart.

187. (Previously presented) A method according to claim 186, comprising:

determining a pacing regime which changes a distribution of the physiological values in a desired manner.

188. (Currently amended) A method according to claim ~~186~~ 187, wherein the distribution of the physiological values comprises a temporal distribution.

189. (Currently amended) A method according to claim ~~186~~ 187, wherein the distribution of the physiological values comprises a spatial distribution.

190. (Previously presented) A method according to claim 187, comprising pacing the heart using the determined pacing regime.

191. (Currently amended) A method according to claim ~~186~~ 187, wherein changing the distribution of the physiological values comprises maintaining physiological values within a given range.

192. (Previously presented) A method according to claim 186, wherein the physiological values are determined substantially simultaneously.

193. (Previously presented) A method according to claim 186, wherein the physiological value comprises perfusion.

194. (Previously presented) A method according to claim 186, wherein the physiological value comprises stress.

195. (Previously presented) A method according to claim 186, wherein the physiological value comprises plateau duration.

196. (Previously presented) A method according to claim 186, wherein determining the physiological value comprises measuring activation time using electrodes.

197. (Previously presented) A method according to claim 145, and comprising determining, using at least one of the maps, a preferred pacing regime for the heart which is optimal with respect to a physiological variable.

198. (Previously presented) A method according to claim 197, comprising pacing the heart using the preferred pacing regime.

199. (Previously presented) A method according to claim 145, wherein generating the maps comprises generating electrical maps.

200. (Previously presented) A method according to claim 197, wherein determining the preferred pacing regime comprises generating a map of the activation profile of the heart.

201. (Previously presented) A method according to claim 145, wherein generating the maps comprises generating mechanical maps.

202. (Previously presented) A method according to claim 197, wherein the physiological variable comprises a stroke volume.

203. (Previously presented) A method according to claim 197, wherein the physiological variable comprises a ventricular pressure profile.

204. (Withdrawn) A method of pacing comprising:

(a) pacing a heart using a first pacing scheme; and

(b) changing the pacing scheme to a second pacing scheme, wherein the change in pacing is not directly related to a sensed or predicted arrhythmia, fibrillation or cardiac output demand in the heart.

205. (Withdrawn) A method according to claim 204, wherein each of the pacing schemes optimizes the utilization of different portions of the heart.

206. (Withdrawn) A method according to claim 204, wherein the changing of the pacing schemes temporally distributes workload between different portions of the heart.